

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

Cancel claims 1-25.

26. (New) An apparatus for control of an extracorporeal blood circuit connected to a blood purification machine, said extracorporeal blood circuit comprising an access branch connected to at least one blood treatment element and a return branch connected to said at least one blood treatment element; said apparatus comprising:

a sensor for measuring a first temperature of blood leaving a patient along the access branch upstream of said at least one blood treatment element;

a control unit for regulating a blood temperature in the extracorporeal blood circuit as a function of said first temperature and of a reference temperature; and

a regulating device for regulating said blood temperature in the extracorporeal blood circuit, connected to a portion of the return branch and downstream of said at least one blood treatment element.

27. (New) An apparatus according to claim 26, wherein said regulating device is combined with said portion of the return branch to form a heat exchanger, said control unit being connected to said temperature regulating device.

28. (New) An apparatus according to claim 26, wherein said regulating device comprises a line for conveying a fluid, said fluid being capable of being heated to a fluid temperature lying within a specified range about 37°C.

29. (New) An apparatus according to claim 26, wherein said regulating device has a seat for housing said portion of the return branch.

30. (New) An apparatus according to claim 26, wherein said extracorporeal blood circuit is connected to a pump for conveying blood along the extracorporeal blood circuit, and said regulating device comprises a line for conveying fluid, the apparatus comprising a sensor for detecting the operating state of said pump, the control unit maintaining the fluid temperature of said fluid equal to said reference temperature when said pump is not in operation.

31. (New) An apparatus according to claim 26, wherein said return branch comprises an expansion chamber, said portion of the return branch being located downstream of the expansion chamber.

32. (New) An apparatus according to claim 26, wherein said at least one blood treatment element is formed by a hemodialysis filter comprising a blood compartment and a dialysate compartment, said dialysate compartment having a dialysate flowing therein.

33. (New) An apparatus according to claim 26, wherein said at least one blood treatment element comprises a hemodialysis filter comprising a blood compartment and a dialysate compartment, said dialysate compartment having a dialysate flowing therein, and an expansion chamber, said expansion chamber receiving a replacement fluid.

34. (New) An apparatus according to claim 26, wherein said at least one blood treatment element is formed by a hemofiltration filter.

35. (New) An apparatus according to claim 26, wherein said at least one blood treatment element comprises a hemofiltration filter and an expansion chamber, said expansion chamber receiving a replacement fluid.

36. (New) An apparatus according to claim 26, wherein said control unit regulates the blood temperature in the extracorporeal blood circuit as a function of the first temperature and of the reference temperature at predetermined intervals of time.

37. (New) An apparatus according to claim 26 or 36, wherein said control unit regulates the blood temperature in the extracorporeal blood circuit as a function of a difference between the first temperature and the reference temperature.

38. (New) A control method for an extracorporeal blood circuit for the circulation of blood in a blood purification machine, the extracorporeal blood circuit comprising an access branch and a return branch, said access branch and return branch being connected to at least one blood treatment element; the control method comprising the steps of:

measuring a first temperature of blood leaving a patient along the access branch;  
and

regulating a blood temperature in the extracorporeal blood circuit as a function of the first temperature and of a reference temperature;  
the blood temperature in the extracorporeal blood circuit being regulated along a portion of the return branch and downstream of said at least one blood treatment element.

39. (New) A control method according to claim 38, wherein the steps of measuring a first temperature of blood leaving a patient along the access branch and of regulating the blood temperature in the extracorporeal blood circuit as a function of the first temperature and of a reference temperature are repeated at intervals of time.

40. (New) A method according to claim 38, wherein a temperature difference between the first temperature and the reference temperature is calculated, said blood temperature in the extracorporeal blood circuit being regulated as a function of said temperature difference.

41. (New) A method according to claim 40, further comprising a step of regulating a heat exchange of a heat exchanger, said heat exchanger comprising said portion of the return branch and a temperature regulating device connected to said portion of the return branch.

42. (New) A method according to claim 40, wherein heat is withdrawn from blood along said portion of the return branch when said temperature difference is positive.

43. (New) A method according to claim 40, wherein heat is supplied to the blood along said portion of the return branch when said temperature difference is negative.

44. (New) A method according to claim 38, wherein a fluid is conveyed along said temperature regulating device, said fluid having a fluid temperature that varies within a specified range about 37° C.

45. (New) A method according to claim 44, wherein blood is conveyed along the extracorporeal blood circuit by means of a pump, a state of operation of the pump being detected, the fluid temperature being regulated as a function of the first temperature and of the reference temperature, and the fluid temperature being kept equal to the reference temperature when the pump is not in operation.

46. (New) A method according to claim 38, wherein the reference temperature is varied according to a specified profile.

47. (New) A method according to claim 38, wherein said extracorporeal blood circuit is used for a hemodialysis treatment; said at least one blood treatment element being formed by a hemodialysis filter through which blood and a dialysate flow in a counterflow mode.

48. (New) A method according claim 38, wherein said extracorporeal blood circuit is used for a hemodiafiltration treatment; said at least one blood treatment element comprising a hemodialysis filter through which blood and a dialysate flow in a counterflow mode, said at least one blood treatment element further comprising an expansion chamber supplied with a replacement fluid.

49. (New) A method according to claim 38, wherein said extracorporeal blood circuit is used for a pure hemofiltration treatment, said at least one blood treatment element comprising a hemofiltration filter through which blood flows.

50. (New) A method according to claim 38, wherein said extracorporeal blood circuit is used for a hemofiltration treatment, said at least one blood treatment element comprising a hemofiltration filter through which blood flows, said at least one blood treatment element further comprising an expansion chamber supplied with a replacement fluid.